

Site Engineering Report

Brown Residence
26 Peach Hill Road
Darien, Connecticut

Prepared for:
Jeffrey Brown
26 Peach Hill Road
Darien, CT 06820

Date Prepared:
August, 2020

Prepared by:
DiVesta Civil Engineering Associates, Inc.

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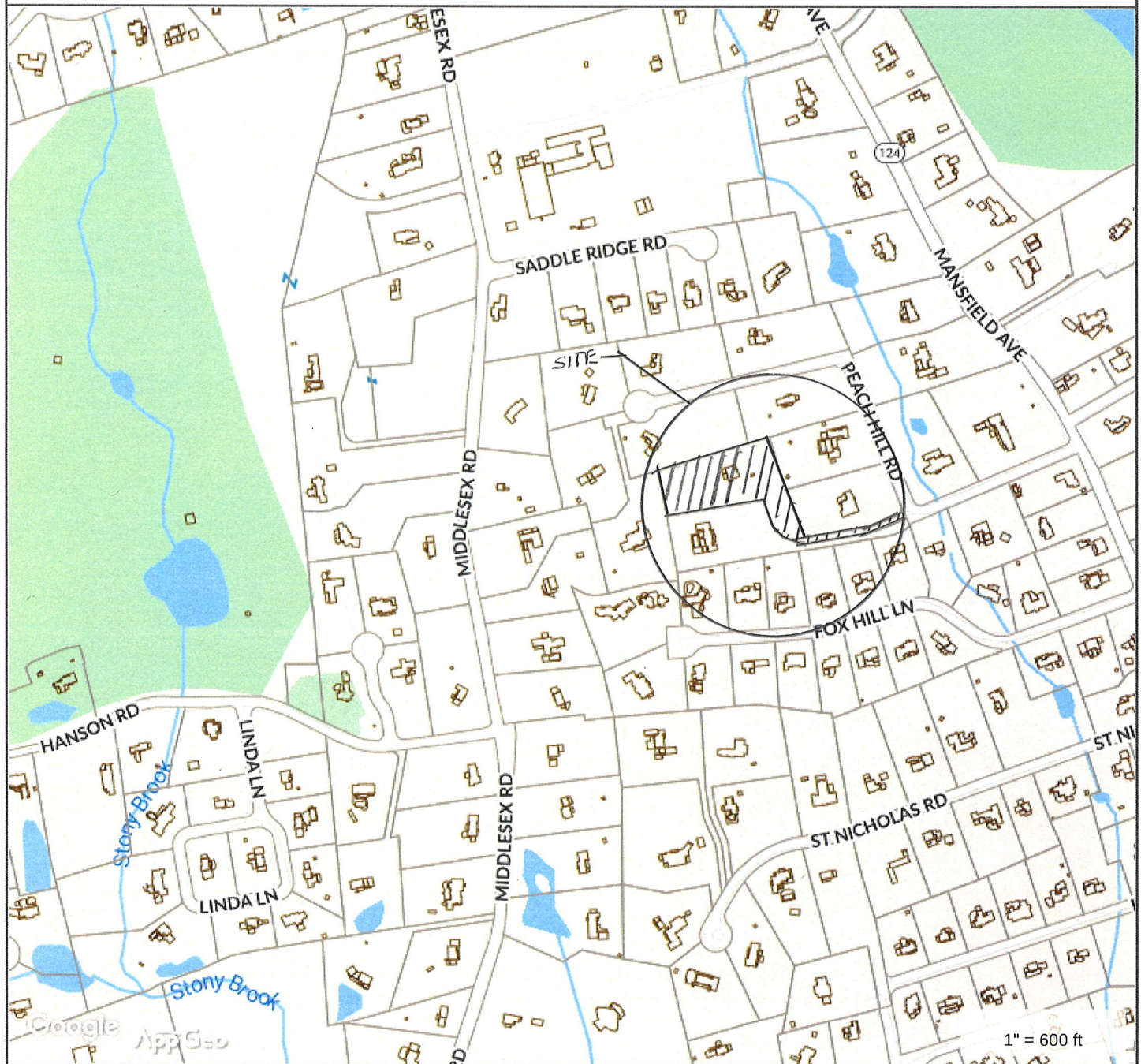
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26 Peach Hill Road



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

Town of Darien, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 8/1/2019
Data updated 8/1/2019

Introduction

This report has been prepared to present technical information in support of the application for razing the existing house, constructing a new residence west of the existing dwelling along with an attached garage, pool, pool patio and a playing field along with two new driveways with a parking court in front of the main portion of the house and a parking court accessing the garage. Other work associated with this project will be site grading and the installation of a stormwater management system to control the runoff from the increase in impervious areas. It is also proposed to install a French drain along the westerly property line to intercept runoff from a pipe directed onto this property and direct the runoff around the proposed dwelling.

Existing Site Conditions

The subject property is located at 26 Peach Hill Road. It is located on the westerly side of Peach Hill Road. The property is $2.99 \pm$ acres or $130,462 \pm$ square feet in size and is located in the R - 2 zone of the Town of Darien. Access to the property is via a paved common driveway from Peach Hill Road.

The property was checked for wetlands by Jim McManus of JJM Wetland Consulting Services, LLC on June 12, 2020 and field located by the project surveyor and placed on the base survey. Wetlands are located along the easterly portion of the property and along the northern side of the common driveway.

The topography of the property is moderately sloping from the west to east towards the wetlands. The property consists of manicured lawn and mature landscaping around the existing house and along the northern property line. There are mature trees throughout the landscape. The area within the wetlands consists of woods and undergrowth.

Project Description

The proposal for the site consists of razing the existing house and removing the existing driveway from the common driveway and constructing a new residence further to the west as well as an attached garage. There will be two **new** driveways constructed from the common driveway to access the front parking courtyard and a second courtyard accessing the garages. The existing septic system will be abandoned and the new dwelling will be connected to the sewer main in Peach Hill Road via force main that was installed in 2016 when the existing house to the south was constructed. Other proposed activities for this property will consist of the construction of

a pool and pool patio to the west of the proposed house, installation of a grinder pump connected to the existing force main, grading associated with the construction of the new dwelling, driveways, parking courts and the playing field and the installation of stormwater management systems to collect the runoff from the new impervious areas.

Stormwater Management Facilities

Existing site runoff characteristics:

Currently the entire runoff from the property including the existing driveway and roof areas from the house sheet flow in an easterly direction towards the wetlands. The analysis that was conducted on this site was to compare the pre-development conditions which consist of an undeveloped parcel of land, per the Zoning Regulations and compare it to the post-development conditions which will consist of the proposed dwelling, driveways, parking courtyards and other impervious areas and lawn. The goal for the project is to manage the runoff so that post-development peak rate of runoff will be equal to or less than pre-development peak rate of runoff.

Developed Condition Site Runoff Characteristics

Runoff from the proposed roof areas, driveways, parking courtyards and pool patio will be directed to a detention system located under the playing field. The runoff from the stormwater management system will be metered out to a level spreader on the north end of the stormwater management system where the runoff will sheet flow into the wetlands. The level spreader will provide some additional detention as well as provide a sheet flow once the runoff overflows the edge. The stormwater management system will consist of 10 rows of 21 units each of Cultec C-4 chambers with an orifice to control the peak rate of runoff. The outflow from the detention system will be added to the remaining flow from the site so that the post-development peak rate of runoff is equal to or less than the pre-development peak rate of runoff for all design storms. (Please see the chart below for a summary of our findings.)

The methodology used to determine the peak rate of runoff was TR-20 computer model by HydroCAD. The 2, 10, 25 and 50 year, 24-hour design storms were used for the analysis of this property. We calculated the runoff for the whole site to determine the peak rate of runoff from the site. We looked at the pre-development conditions and then compared it to the post-development conditions with and without detention

Summary: Overall site

	2 Year Design Storm (CFS)	10 Year Design Storm (CFS)	25 Year Design Storm (CFS)	50 Year Design Storm (CFS)
Pre Development	3.21	6.48	7.89	9.31
Post Development	2.13	4.41	5.51	6.67

Based on our findings the post-development peak rate of runoff from the proposed site plan will be less than or equal to pre-development conditions for the 2, 10, 25 and 50-year design storms.

Site Utilities

Water Supply

The site is currently served by an individual well which will be abandoned and a new well drilled.

Sanitary Sewer

The site is currently served by an individual septic system. This system will be abandoned and a grinder pump installed to service the two new structures and be connected to the existing force main which is connected to the sewer main in Peach Hill Road.

Sedimentation and Erosion Control Narrative

Regrading of the existing contours will be required for the proposed dwelling, the driveways, parking courtyards, pool, pool patio and the playing field. All regrading on site will have a minimum ratio of three feet horizontal to one-foot vertical slope, if not flatter. Care should be taken to control runoff during the initial stage of excavation for the proposed structures, driveways and playing field. The existing driveway from the common driveway will be used to access the property until the two new driveways are roughed in.

Prior to any excavation the perimeter silt fence consisting of a double row of silt fence with staked hay bales along the boundary of the wetlands shall be installed and maintained throughout the life of the project until all areas have been stabilized. At the end of the workday and weekend and during rain events, staked hay bales are to be installed at the driveway entrance to reduce runoff from entering the property.

Once the catch basins are installed hay bales shall be placed around the basins and the grates shall be wrapped with filter fabric.

Any soil stockpiles will be ringed with silt fence.

Reference is made to the Sedimentation and Erosion Controls on the site plan, which are, along with this text included in the report, part of the Sedimentation and Erosion Control Plan for this project.

Brown Residence

Appendix A:

**Stormwater Management
Operation and Maintenance
Plan**

DiVesta Civil Engineering Associates, Inc.

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Stormwater Management
Operation and Maintenance Plan
For
Brown Residence
26 Peach Hill Road
Darien, Connecticut
July 27, 2020

The object of the stormwater management operation and maintenance plan is three fold; 1) is to collect the runoff from proposed roof area, patios, driveway and portion of the lawn and convey the runoff into the detention system, 2) once the runoff has been collected and conveyed to the detention system the runoff will infiltrate into the surrounding soil and/or be metered out in a control manner, 3) the detention system will detain runoff from the proposed roof areas, patios, driveways, parking court and a portion of the lawn area and control the increase in runoff in the chambers.

Maintenance Measures

1. Inspect annually the roof drains to ensure that they are clear and free of buildup debris and that there are no blockages and that the pipes are free flowing.
2. Inspect annually the catch basins and channel drains in the driveways and within the pool patio area and remove any accumulated sediment by hand and deposit of it properly.
3. Inspect annually the junction boxes and remove any accumulated sediment by hand and deposit of it properly.
4. Removal of any accumulated sediment will ensure that the detention system will function properly.

Brown Residence

Appendix B:

Hydrology Calculations

DiVesta Civil Engineering Associates, Inc.

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Brown Residence

Appendix C:
Wetlands Soils Report

DiVesta Civil Engineering Associates, Inc.

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JMM WETLAND CONSULTING SERVICES, LLC

23 Horseshoe Ridge Road
Newtown, CT 06482
Phone: 203-364-0345

REPORT DATE: July 6, 2020
PAGE 1 OF 3

ON-SITE SOIL INVESTIGATION REPORT

PROJECT NAME & SITE LOCATION:

Project Site
26 Peach Hill Road
Darien, Connecticut

JMM Job No.: 20-2605-DAR-1

Field Investigation Date(s): 6/12/2020

Field Investigation Method(s):

- ☒ Spade and Auger
☐ Backhoe Test Pits
☐ Other:

REPORT PREPARED FOR:

Mr. Jeffery Brown
26 Peach Hill Road
Darien, CT 06820

Field Conditions:

Weather: Sunny 70's
Soil Moisture: Moist
Snow Depth: N/A
Frost Depth: N/A

Purpose of Investigation:

- ☒ Wetland Delineation/Flagging in Field
☐ Wetland Mapping on Sketch Plan or Topographic Plan
☐ High Intensity Soil Mapping by Soil Scientist
☒ Medium Intensity Soil Mapping from USDA-NRCS Web Soil Survey Maps
☐ Other:

Base Map Source: USDA-NRCS Web Soil Survey (attached)

Wetland Boundary Marker Series: JMM-1 to JMM-33

General Site Description/Comments: The site is located west of Peach Hill Road, in Darien, CT. The site is comprised of a single-family residence, maintained lawn, landscaped areas, paved driveway, scattered trees and shrubs, and forested upland and wetland areas, which includes an intermittent ditched watercourse (see Figure 1, attached). The soil types were found to be both undisturbed and disturbed. The disturbed soils were noted to be scattered throughout the site. The undisturbed soils are derived from glacial till (i.e., unstratified sand, silt, and rock) deposits. The undisturbed upland soils are comprised of the well-drained Paxton (84) soil series and the moderately well drained Woodbridge (45) soil series. Any disturbed upland and wetland soils were mapped as the Udorthents (308) and Aquents (308w) mapping units. The undisturbed wetland soils were identified as the poorly to very poorly drained Ridgebury, Leicester, and Whitman (3) soil series complex. The regulated areas associated with the site consist of a seasonally saturated to flooded wooded swamp located along the eastern/southeastern parts of the overall site (JMM-#-series). It is worth noting that an intermittent ditched watercourse follows along the northern edge of the paved driveway in the in the southeastern portion of the site. Typical vegetation observed within the regulated area included such species as red maple, tupelo, American elm, Japanese barberry, spicebush, multiflora rose, firebush, skunk cabbage, sedges, jewelweed, sensitive fern, jewelweed, smartweeds, lurid sedge, Asiatic bittersweet, and poison ivy, to name a few.

ON-SITE SOIL INVESTIGATION REPORT (CONTINUED)

PROJECT NAME & SITE LOCATION: Project Site
26 Peach Hill Road, Darien, CT

SOIL MAP UNITS

Wetland Soils

Ridgebury fine sandy loam (3). This soil series consists of deep, poorly and somewhat poorly drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level to moderately steep soils on till plains, low ridges and drumloidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically these soils have a black sandy loam surface layer 6 inches thick. The mottled subsoil from 6 to 16 inches is olive gray sandy loam. The mottled substratum from 16 to 60 inches is a light olive brown and olive, very firm and brittle gravelly sandy loam.

Leicester fine sandy loam (3). This series, which is some Connecticut counties is found only in complex with the Ridgebury and Whitman series, consists of deep, poorly drained loamy soils formed in friable glacial till on uplands. They are nearly level to gently sloping soils in drainage ways and low-lying positions on till covered uplands. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically, these soils have a surface layer of black fine sandy loam 6 inches thick. The subsoil from 6 to 23 inches is grayish brown, mottled fine sandy loam. The substratum from 26 to 60 inches or more is dark yellowish brown, mottled, friable, gravelly fine sandy loam.

Whitman fine sandy loam (3). This series, which is some Connecticut counties is only mapped in complex with the Ridgebury and Leicester series, consists of deep, very poorly drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level and gently sloping soils on till plains, low ridges and drumloidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically these soils have a black fine sandy loam surface layer 8 inches thick. The mottled subsoil from 8 to 15 inches is gray sandy loam. The mottled substratum from 15 to 60 inches is firm, olive gray to gray dense glacial till.

Aquents (308w). This soil map unit consists of poorly drained and very poorly drained disturbed land areas. They are most often found on landscapes, which have been subject to prior filling and/or excavation activities. In general, this soil map unit occurs where two or more feet of the original soil surface has been filled over, graded or excavated. The *Aquents* are characterized by a seasonal to prolonged high ground water table and either support or are capable of supporting wetland vegetation. *Aquents* are recently formed soils, which have an aquic moisture regime. An aquic moisture regime is associated with a reducing soil environment that is virtually free of dissolved oxygen because the soil is saturated by groundwater or by water of the capillary fringe. The key feature is the presence of a ground water table at or very near to the soil surface for a period of fourteen days or longer during the growing season.

Upland Soils

Paxton fine sandy loam (84). This series consists of deep, well drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level to very steep soils on till plains, low ridges and drumloidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. In tilled areas, these soils have a dark brown fine sandy loam surface layer 8 inches thick. The subsoil from 8 to 26 inches is dark yellowish brown and olive brown fine sandy loam. The substratum from 26 to 60 inches is olive, very firm and brittle gravelly fine sandy loam.

ON-SITE SOIL INVESTIGATION REPORT (CONTINUED)

PROJECT NAME & SITE LOCATION: Project Site
26 Peach Hill Road, Darien, CT

SOIL MAP UNITS

Woodbridge fine sandy loam (45). This series consists of deep, moderately well drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level to moderately steep soils on till plains, low ridges and drumloidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. In tilled areas, these soils typically have a very dark grayish brown fine sandy loam surface layer 7 inches thick. The subsoil from 7 to 30 inches is dark yellowish brown and light olive brown fine sandy loam, mottled below 18 inches. The substratum from 30 to 60 inches is light olive brown, very firm and brittle gravelly fine sandy loam.

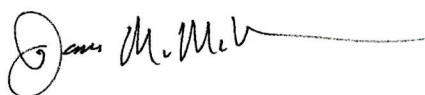
Udorthents (308). This soil mapping unit consists of well drained to moderately well drained soils that have been altered by cutting, filling, or grading. The areas either have had two feet or more of the upper part of the original soil removed or have more than two feet of fill material on top of the original soil. *Udorthents* or Made Land soils can be found on any soil parent material but are typically fluvial on glacial till plains and outwash plains and stream terraces.

Any accompanying soil logs and soil maps, and the on-site soil investigation narrative are in accordance with the taxonomic classification of the National Cooperative Soil Survey of the USDA Natural Resource Conservation Service, and with the Connecticut Soil Legend (DEP Bulletin No.5, 1983). Jurisdictional wetland boundaries were delineated pursuant to the Connecticut General Statutes (CGS Sections 22a-36 to 22a-45), as amended. The site investigation was conducted and/or reviewed by the undersigned Registered Soil Scientist(s) [registered with the Society of Soil Scientists of Southern New England (SSSSNE) in accordance with the standards of the Federal Office of Personnel Management].

All wetland boundary lines established by the undersigned Soil Scientist are subject to change until officially adopted by, local, state, and federal regulatory agencies.

Respectfully submitted,

JMM WETLAND CONSULTING SERVICES, LLC



James M. McManus, MS, CPSS
Certified Professional Soil Scientist
Field Investigator/Reviewer

FIGURE 1: 26 Peach Hill Road



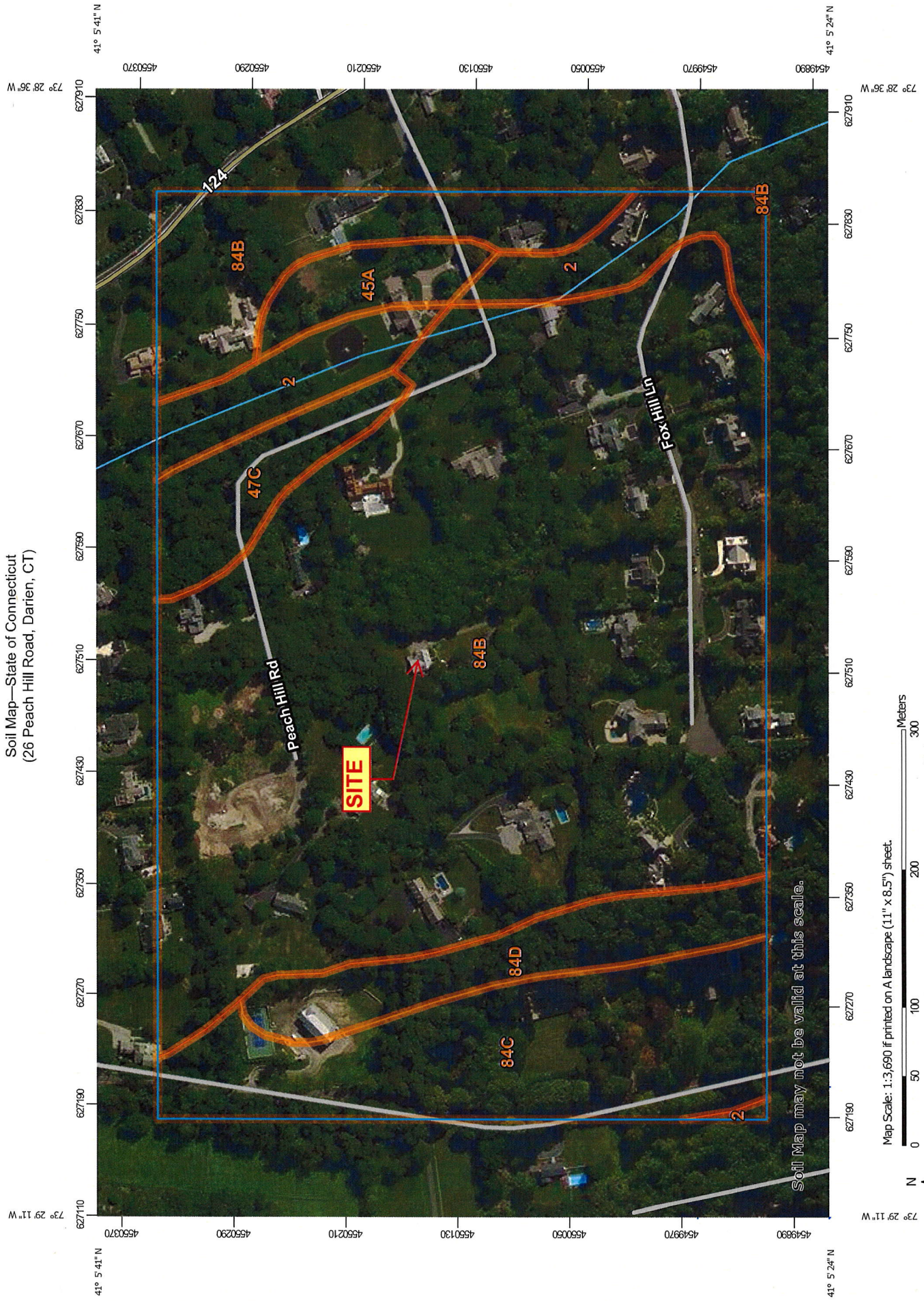
Property Information
Property ID 09353
Location 26 PEACH HILL ROAD
Owner BROWN JEFFERY N



**MAP FOR REFERENCE ONLY
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Geometry updated 8/1/2019
Data updated 8/1/2019















































Soil Map—State of Connecticut
(26 Peach Hill Road, Darien, CT)



Map Scale: 1:3,690 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)		Area of Interest (AOI)		Spoil Area
Soils		Soil Map Unit Polygons		Stony Spot
		Soil Map Unit Lines		Very Stony Spot
		Soil Map Unit Points		Wet Spot
Special Point Features		Blowout		Other
		Borrow Pit		Special Line Features
		Clay Spot		Streams and Canals
		Closed Depression		Transportation
		Gravel Pit		Rails
		Gravelly Spot		Interstate Highways
		Landfill		US Routes
		Lava Flow		Major Roads
		Marsh or swamp		Local Roads
		Mine or Quarry		Background
		Miscellaneous Water		Aerial Photography
		Perennial Water		
		Rock Outcrop		
		Saline Spot		
		Sandy Spot		
		Severely Eroded Spot		
		Sinkhole		
		Slide or Slip		
		Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 19, Sep 13, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 21, 2014—Aug 27, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Ridgebury fine sandy loam, 0 to 3 percent slopes	4.9	6.8%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	1.8	2.5%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	2.7	3.8%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	48.7	67.9%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	9.5	13.3%
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	4.1	5.7%
Totals for Area of Interest		71.7	100.0%

State of Connecticut

84B—Paxton and Montauk fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qn

Elevation: 0 to 1,570 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 55 percent

Montauk and similar soils: 30 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, drumlins, ground moraines

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Side slope, crest, nose slope

Down-slope shape: Convex, linear

Across-slope shape: Convex

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam

Bw1 - 8 to 15 inches: fine sandy loam

Bw2 - 15 to 26 inches: fine sandy loam

Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 18 to 39 inches to densic material

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 18 to 37 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: C

Ecological site: Well Drained Dense Till Uplands (F144AY007CT)

Hydric soil rating: No

Description of Montauk

Setting

Landform: Drumlins, hills

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

A - 0 to 4 inches: fine sandy loam

Bw1 - 4 to 14 inches: fine sandy loam

Bw2 - 14 to 25 inches: sandy loam

2Cd1 - 25 to 39 inches: gravelly loamy coarse sand

2Cd2 - 39 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 20 to 38 inches to densic material

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 24 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: Well Drained Dense Till Uplands (F144AY007CT)

Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 5 percent

Landform: Hills, ground moraines, depressions, drainageways

Landform position (two-dimensional): Toeslope, backslope, footslope

Landform position (three-dimensional): Base slope, head slope, dip

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Woodbridge

Percent of map unit: 5 percent

Landform: Hills, drumlins, ground moraines

Landform position (two-dimensional): Backslope, footslope, summit

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Charlton

Percent of map unit: 5 percent

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Data Source Information

Soil Survey Area: State of Connecticut

Survey Area Data: Version 20, Jun 9, 2020